

Claims

[c1] 1. A card connector with reinforcing structure installed on a circuit board, comprising:

an insulated body having two side beams and a horizontal beam, wherein the horizontal beam joins up the two side beams to form a frame, the side beams each have a sliding groove adapted for accommodating two side edges of an expansion card and the horizontal beam has at least a terminal plugging slot adapted for receiving a front end of the expansion card;

a plurality of terminals fitted inside the horizontal beam with one end of each terminal extending into the terminal plugging slot and the other end extending away from the terminal plugging slot to connect with the circuit board; and

a reinforcing structure positioned next to the horizontal beam on a side away from the terminal plugging slot, wherein the reinforcing structure at least comprises a bump bar fixed to the circuit board, the bump bar has a comb-shaped bump surface facing the surface of the horizontal beam on the other side of the terminal plugging slot, and the teeth of the comb-shaped bump surface occupy the space between the other ends of neigh-

boring terminals.

- [c2] 2. The card connector of claim 1, wherein the other ends of the terminals are fixed on the circuit board by surface mounting.
- [c3] 3. The card connector of claim 1, wherein the bump bar is fixed on the circuit board by surface mounting.
- [c4] 4. The card connector of claim 1, wherein the reinforcing structure furthermore comprises a nut and the bump bar has an externally threaded bolt so that the nut can be screwed into the protruding end of the threaded bolt to lock the bump bar and the circuit board together after passing the threaded bolt through the circuit board.
- [c5] 5. The card connector of claim 4, wherein the bump bar furthermore incorporates a pressing block that touches the upper surface of the horizontal beam away from the circuit board.
- [c6] 6. The card connector of claim 1, wherein the reinforcing structure furthermore comprises a screw that passes through the circuit board and screw into an internally threaded hole in the bump bar.
- [c7] 7. The card connector of claim 1, wherein the reinforcing structure furthermore comprises a screw and a nut, the

nut screwing onto a protruding end of the screw after passing through the bump bar and the circuit board to thereby fasten the bump bar and the circuit board together.

- [c8] 8. The card connector of claim 1, wherein the reinforcing structure furthermore comprises a screw and a casing, one side of the bump bar is riveted to the casing, and the screw is screwed into an internally threaded hole on the other side of the bump bar after passing through the circuit board to thereby fasten the casing, the bump bar and the circuit board together.
- [c9] 9. The card connector of claim 1, wherein the bump bar is fabricated using plastic or metallic material.
- [c10] 10. A card connector with a reinforcing structure mounted on a circuit board, comprising:
 - an insulated body having two side beams and a horizontal beam, wherein the horizontal beam joins up the two side beams to form a frame, the side beams have a sliding groove adapted for accommodating two side edges of an expansion card and the horizontal beam has a terminal plugging slot for receiving a front end of the expansion card;
 - a plurality of terminals fitted inside the horizontal beam with one end of each terminal extending into the termi-

nal plugging slot and the other end extending away from the terminal plugging slot to connect with the circuit board; and

a metallic shielding securely fixed to the insulated body, wherein the metallic shielding has at least a fixing hole positioned on one side of the horizontal beam away from the terminal plugging slot and the metallic shielding also has a reinforcing structure fastened through the fixing hole onto the circuit board.

- [c11] 11. The card connector of claim 10, wherein the reinforcing structure comprises a nut and a screw, the screw extending downwardly through the fixing hole of the metallic shielding and the printed circuit board to threadedly engage with the nut.
- [c12] 12. The card connector of claim 11, wherein the screw has a head abutting against a vertical portion of the metallic shielding in front of the fixing hole.
- [c13] 13. The card connector of claim 12, wherein the metallic shielding provides the card connector protection from electrostatic discharge.
- [c14] 14. A handheld device, comprising:
 - a casing;
 - a printed circuit board received in the casing;

a card connector mounted on the printed circuit board, said card connector having terminals therein; an elongated expansion card inserted into the connector and electrically connecting with the printed circuit board via the terminals of the card connector, said elongated expansion card having an exposed portion located outside the casing; and a reinforcing structure engaging with the card connector, said reinforcing structure reinforcing the card connector to resist a force acting thereon when the exposed portion of the elongated expansion card is subjected to an impact force whereby the electrical connection between the expansion card and the printed circuit board via the terminals can be maintained despite the impact force.

- [c15] 15. The handheld device in accordance with claim 14, wherein the reinforcing structure is a bump bar having a comb-shaped bump surface abutting against the card connector.
- [c16] 16. The handheld device in accordance with claim 15, wherein the comb-shaped surface extends across ends of the terminals in electrical connection with the printed circuit board.
- [c17] 17. The handheld device in accordance with claim 15, wherein the bump bar is soldered to the printed circuit

board.

- [c18] 18. The handheld device in accordance with claim 15, wherein the bump bar is fixed to the printed circuit board by screwing connection.
- [c19] 19. The handheld device in accordance with claim 14, wherein the reinforcing structure includes a shielding fixed to the card connector and a screw, the terminals having front ends for electrically connecting with the elongated expansion card and rear ends for electrically connecting with the printed circuit board, the shielding having a portion extending rearwards behind the rear ends of the terminals and secured to the printed circuit board by the screw.
- [c20] 20. The handheld device in accordance with claim 14, wherein the reinforcing structure includes a bump spine secured to the casing, the bump spine having a slant surface abutting against the card connector.